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### Authors

de Abreu Perez, Cristina  
Camacho, Luiz Antonio Bastos  
Mendes, Felipe Lacerda  
[et al.](#)

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# 'If I hadn't seen this picture, I'd be smoking'— perceptions about innovations in health warnings for cigarette packages in Brazil: a focus group study

Cristina de Abreu Perez <sup>1</sup>, Luiz Antonio Bastos Camacho,<sup>1</sup> Felipe Lacerda Mendes,<sup>2</sup> Andre Luiz Oliveira da Silva <sup>3</sup>, Valeska Carvalho Figueiredo,<sup>4</sup> Gloria Maria de Oliveira Latuf,<sup>3</sup> Ana Marcia Messeder Sebrao Fernandes,<sup>3</sup> Patrícia Gonçalves Duarte Albertassi,<sup>3</sup> Patricia Aleksitch Castello Branco,<sup>3</sup> Patricia Francisco Branco,<sup>3</sup> Stefania Schimaneski Piras,<sup>3</sup> Maribel Carvalho Suarez<sup>5</sup>

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<sup>1</sup>National School of Public Health, Oswaldo Cruz Foundation, Rio de Janeiro, Brazil

<sup>2</sup>Conicq's Executive Secretariat, National Cancer Institute, Rio de Janeiro, Brazil

<sup>3</sup>National Health Surveillance Agency, Rio de Janeiro, Brazil

<sup>4</sup>National School of Public Health. Center for Studies on Tobacco and Health, Oswaldo Cruz Foundation, Rio de Janeiro, Brazil

<sup>5</sup>Coppead, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil

## Correspondence to

Dr Cristina de Abreu Perez, National School of Public Health, Oswaldo Cruz Foundation, Rio de Janeiro 21040-360, Brazil; [cristinadeabreperez@gmail.com](mailto:cristinadeabreperez@gmail.com)

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## ABSTRACT

**Objective** To investigate the perceptions of young people and adults, smokers and non-smokers about the current set of innovations introduced in 2018 into the Brazilian tobacco products' health warnings.

**Methods** Twenty focus groups were conducted in five state capitals in Brazil. The participants (n=163) were segmented by smoking status, age (15–17 years, 18–55 years) and social grade (C, D–E classes) to examine cigarette packaging and explore the participants' perceptions of health warnings.

**Results** Health warnings capture attention, eliciting apprehension, fear, disgust and concern about the negative consequences of cigarette consumption. The 2018 Brazil health warnings are spontaneously recalled by participants, even without the presence of cigarette packages. However, the analysis also reveals the challenges of overcoming communication barriers and distorted interpretations, especially among smokers. The inclusion of direct and provocative stimuli, such as the use of the word 'you', attracts attention and creates more proximity to the recipient of the message. The results also highlight the interest and fear elicited by warnings on toxic constituents and the importance of using contrasting colours in warnings, which differentiate them from the colours of cigarette packs.

**Conclusion** Introducing innovative components in health warnings can catch consumers' attention but considering that the interviewees encountered difficulties interpreting textual warnings about toxic constituents in cigarettes, the study reinforces the importance of adopting direct language and pictures, instead of text, which can visually transmit the warning messages and the use of specific wording that generates proximity between the emitter and receiver.

one-pack-per-day smokers are exposed to warnings more than 7000 times a year.<sup>5</sup>

In 1988, Brazil introduced the first text-only warning: 'The Ministry of Health Warns: Smoking is Harmful to Health'.<sup>6</sup> In 1995, this was replaced with a short paragraph, and in 1996 stronger more direct warnings were required by law. Brazil was the second country to adopt pictorial health warnings covering 100% of the package back face in 2001.<sup>7</sup> These were renewed in 2003, 2008 and 2018, considering that periodical revision is recommended since the impact of a warning tends to decrease over time.<sup>8</sup>

Brazil has reduced the prevalence of smoking,<sup>9</sup> currently 9.8%<sup>10</sup> and health warnings have contributed to this reduction.<sup>11</sup> Previous studies evaluated the Brazilian health warnings, investigating aspects such as motivational impact,<sup>12</sup> aversiveness<sup>13 14</sup> and effects on smoking prevalence reduction.<sup>11</sup> However, little is known about consumers' perceptions, the meanings they elaborate, barriers and unexpected interpretations of the health warnings.

Considering the predominance of quantitative approaches in developing countries,<sup>3</sup> the present study deepens the understanding of low-income and low-educated consumers' perceptions of health warnings, revealing difficulties in interpreting textual warnings about the toxic constituents of cigarettes as well as the importance of adopting direct language and pictures, which can visually transmit the messages. The study highlights the importance of generating proximity between the emitter and receiver and the use of loud colours to contrast warnings with cigarette packaging.

## METHODS

The focus group methodology was chosen to capture the discourse and participant interaction, reproducing conversations from their daily lives. Twenty focus groups were conducted with smokers (n=81) and non-smokers (n=82) between February and March 2020 and included the country's five macro-regions. The groups took place in five cities with cultural and economic relevance in each macro-region: Rio de Janeiro (southeast), Campo Grande (midwest), Curitiba (south), Manaus (north) and Recife (northeast). While populational generalisation is not suggested, this strategy aims to

## INTRODUCTION

Health warnings and messages on tobacco product packages are a cost-effective means to increase public awareness of the health effects of tobacco use and to reduce tobacco consumption.<sup>1</sup> Warning labels help to increase knowledge about the harm of tobacco smoking, prevent relapses, discourage experimentation and initiation, motivate smokers not to smoke when they are about to do so, increase smoking cessation intentions and reduce the appeal of cigarette packs.<sup>2–4</sup> It is estimated that

improve awareness of regional specificities that might eventually impact health warning perceptions.

Participants were recruited by market researchers from DataFolha, a Brazilian research institute. Groups were formed using C and DE social grade participants, the highest prevalence of smokers<sup>15</sup> in Brazil and many other countries<sup>16</sup> and the majority of the Brazilian population, characterised by low-income, semi-skilled and unskilled workers. Recruitment was guided by the Brazilian Economic Classification Criteria (Critério Brasil), determined by consumption items in the household, educational level and access to public utility services.

Age segmentation was employed to maximise the diversity of participants and points of view while at the same time avoiding difficulties due to generational differences and use of language. Gender distribution among groups was not significantly different. Among adults, smokers were those who smoked daily. Among teenagers, smokers were those who had lit, tried or smoked cigarettes, at least once, in the last 30 days. The demographics for each group are shown in table 1.

## Procedures

Before the focus group, all participants and parents or guardians of teenage participants signed an informed consent form, which explained the anonymity and confidentiality of participants and the option to skip any questions or withdraw at any time and received a £14 incentive. The initial explanation also highlighted that the researchers would watch the discussions from behind the room mirror and that sessions would be audio and video recorded.

All groups were moderated by one experienced facilitator from DataFolha and the first author. A semistructured script served as a guide for different dimensions of perception, such as participants' sensations elicited by packages' text, images and colours, probing sight, smell, touch and their further interpretations.

**Table 1** Demographic characteristics of, and number within, each group

City/group	Smoking status	Age (years)	Social grade	Number in group	
Rio de Janeiro N=34	Group #1	Smokers	15–17	C DE	7
	Group #2	Smokers	18–55	C DE	9
	Group #3	Non-smokers	15–17	C	9
	Group #4	Non-smokers	18–55	C DE	9
Curitiba N=35	Group #1	Smokers	15–17	C DE	8
	Group #2	Smokers	18–55	C DE	9
	Group #3	Non-smokers	15–17	C DE	9
	Group #4	Non-smokers	18–55	C	9
Campo Grande N=32	Group #1	Smokers	15–17	C DE	8
	Group #2	Smokers	18–55	C DE	8
	Group #3	Non-smokers	15–17	C DE	8
	Group #4	Non-smokers	18–55	C	8
Manaus N=30	Group #1	Smokers	15–17	C DE	8
	Group #2	Smokers	18–55	C DE	8
	Group #3	Non-smokers	15–17	C DE	8
	Group #4	Non-smokers	18–55	C DE	6
Recife N=32	Group #1	Smokers	15–17	C DE	8
	Group #2	Smokers	18–55	C DE	8
	Group #3	Non-smokers	15–17	C DE	8
	Group #4	Non-smokers	18–55	C DE	8
Total					163



**Figure 1** (A) Message on the front face of cigarette packs indicating that 'this product causes cancer'; 'stop smoking'; 'dial health: 136'. Images downloaded from <https://www.gov.br/anvisa/pt-br/assuntos/tabaco/advertencias-sanitarias> and used under permission (translation available in online supplemental material). (B) Messages on the sides of cigarette packs with specific warnings against hazards from specific chemicals conveyed by cigarette smoke. Images downloaded from <https://www.gov.br/anvisa/pt-br/assuntos/tabaco/advertencias-sanitarias> and used under permission (translation available in online supplemental material). (C) Pool of pictures and messages printed on the back of cigarette packs warning against specific hazardous effects of smoking. Images downloaded from <https://www.gov.br/anvisa/pt-br/assuntos/tabaco/advertencias-sanitarias> and used under permission (translation available in online supplemental material).

Participants were allowed to introduce their own questions and unexpected considerations regarding health warnings.

Initially, participants were encouraged to spontaneously recall cigarette packages and their personal experiences with the product. Then, several packages were presented to the groups, allowing them to carefully look at, handle and analyse the language content and graphic aspects of the warnings (figure 1A–C). The translation of these figures is available in an

online supplemental file. The questions directed the participants' attention to the back, side and front faces of the packages, asking if they had already noticed/seen the warnings, what caught their attention and what they felt while looking at the health warnings. The objective was to understand the perceptual process, that is, the stages of exposure (or sensation), attention and interpretation of health alerts as lived by the participants. The discussion also included suggestions for future health warning improvements.

The same packages, containing all the warnings in force (figure 1A–C), were used in all groups.

## Analysis

Focus group sessions were fully transcribed, totalling 655 pages, and compared with audio and video files, ensuring accuracy. Focus group transcripts were coded and categorised.<sup>17</sup> This task consisted of labelling the main discourses, seeking to identify the perceptual process, including themes related to sensations, attention to and interpretation of health alerts. The initial codes were suggested by the existing literature, while others emerged from the data. The analysis followed a hermeneutic process of continuous interaction between specific statements and their reference to the whole, considering the informant's profile and the discussions during the focus group.<sup>18</sup>

## RESULTS

### Perceptions of the warnings set

During discussion, health warnings were recalled by participants even before any exposure to cigarette packages when each informant was asked to register the first words that came to mind when thinking about cigarette packs using a post-it to avoid social influence. Most participants recalled the pictures and sentences displayed on the back panel (figure 1C), making references to the 'images', 'photos on the back', 'the message that comes behind the cigarette' and 'back of the package'. In this initial stimulus, 409 words were mentioned by the participants, 58% of which were related to warnings and negative effects of cigarette smoking. The most recurrently cited words were cancer (n=40), alerts (n=31), disease (n=29), warnings (16) and harm (15). This spontaneous recall shows that health alerts content is perceived and recalled by participants, including smokers, who remember negative consequences more than the pleasure usually associated with the product.

When we introduced the cigarette packs to the conversation, allowing the group to handle different types of packages, the participants' initial comments continued to refer to the warnings as causing discomfort and concern. According to the participants, health warnings inform, provoke thinking, frighten and generate associations with smokers' deaths:

If I hadn't seen this picture, I'd be smoking. (18–55 years, non-smoker, Rio de Janeiro)  
[The picture] makes me think. 'I have to quit smoking, otherwise the worst will happen'. (18–55 years, smoker, Curitiba)

The introduction of the packs into the discussion elicited different reactions between groups. For smokers, the packs produced notable excitement and curiosity, especially among teenagers. They wanted to look at the details, smell and if permitted to, open the packs. Along with a craving reaction, the smokers observed the health alerts and spontaneously recognised the intent and felt fear. Some interviewees also pointed out the reduced impact of the warnings over time.

The photos ... at the beginning: 'oh my God, is this necessary?'  
But nowadays, I already look and say, 'ah' [laconic tone]. (18–55 years, smoker, Rio de Janeiro)

This sentiment aligns with studies showing that prolonged repetition of a stimulus can place it below the perceptual threshold,<sup>19</sup> reinforcing the relevance of a permanent renovation process.

During this package inspection, we asked participants about their feelings when they saw the photos. Both smokers and non-smokers reported feeling 'fear' and 'disgust'.

Smokers and non-smokers both indicated that warnings work best for those who do not smoke yet, helping to avoid smoking initiation. This perception appears related to the fact that regular smokers are accustomed to health warnings due to permanent contact. Some mentioned that, among smokers, warnings have a weaker effect due to nicotine dependence. The participants also discussed the warning location on the packages, and some considered it important to have graphic warnings on the front face:

It's hard for a smoker to read there: 'this product causes harm to health'. It's hard for this person to quit. I think it will work for those who do not smoke. It will encourage them not to smoke in the future. When you see a package like that, you get scared, you think it's ugly and things like that, but you're going to smoke anyway. (18–55 years, smoker, Manaus)

This sense of helplessness and immutability expressed above seems related to the fact that only few smokers recognised the importance of health warnings as a source of information and reflection on the need to quit. In fact, many smokers claimed that health warnings had no effect on them, and they mockingly explained their strategies for hiding or avoiding them:

Depending on the picture, I cover it with a piece of paper. (18–55 years, smoker, Rio de Janeiro)  
A smoker doesn't look at this picture. I take [the sticker] and put it here [covering the picture]. (18–55 years, smoker, Curitiba)

Despite these statements, a deeper analysis of these 'deviation strategies', associated with other evidence, including warnings recall and the predominance of associations to words such as 'cancer', 'harm' and 'diseases', suggest that warnings have become a discomfort that continues to echo in a smoker's consciousness. Additional evidence of the capacity of health warnings to overcome smokers' perceptual threshold is suggested by the connections they establish between relatives' and acquaintances' deaths and smoking:

... when I see a cigarette package, I remember that I really have to quit smoking, ... for having two cases of death in my family: my grandfather and uncle who died of lung cancer. (18–55 years, smoker, Manaus)

The use of yellow stripes on package front and back panels (figure 1A and C), an innovation of the current health alerts, was spontaneously mentioned by the interviewees as a positive alert that draws attention, has good visibility and highlights the text. The participants also associated the colour with traffic signs and traffic lights, eliciting an alert attitude:

The colour is ideal, yellow, just like the traffic lights. You go when it's green and then, when it comes to the yellow, it's already a warning. (18–55 years, non-smoker, Manaus)

One brand used a strategy to apply, on a special edition, the same yellow colour as the warning label and participants stated that this strategy reduces the contrast.

I think the front face draws the attention [the text], even though it's black, ... except for this [yellow package] that goes unnoticed because it's yellow. The others draw attention. There is contrast. (18–55 years, non-smoker, Rio de Janeiro)

Finally, the participants indicated that a person who starts smoking does not usually see the health warnings on the package because their first contact is not with a pack but with a single cigarette bought or offered by someone else:

We don't get a pack and start smoking. We don't have the package to look at. Actually, we get a cigarette. We don't get a cigarette pack. (15–17 years, smoker, Recife)

### Textual aspects

While the image content is perceived, even involuntarily, the textual elements were not always highlighted by participants. The word 'you', an innovation introduced into all back panel warnings, was discussed after the moderator asked them to direct their attention to the textual messages. During discussions, the participants usually agreed that the word 'you' is direct, strong, draws attention and addresses those who are reading the message:

'You suffer' is a direct message to me—a smoker. There's nothing meant for third parties here. (18–55 years, smoker, Campo Grande)

Because I'm aware, right?—'You suffer'—'you' here refers to me. (15–17 years, smoker, Campo Grande)

The quotation above suggests that the use of 'you' is interpreted by consumers as a call for their agency, reconnecting the reader with the negative consequences of the smoking behaviour. In a different direction, imperative sentences, such as 'stop smoking', evoke a feeling of resistance, as they relate to an imposing and authoritarian discourse. Some respondents suggested that a reflective approach, such as 'Do you really need to smoke?' or 'Why do you harm your health by smoking?', could be more effective, instilling a sense of agency and resulting in behaviour change. Another alternative is to promote an encouraging tone:

This sentence—'Stop smoking'—if you take into consideration its psychological effect: people don't like to receive orders, to be told what to do. It might be changed from 'Stop smoking' to 'You can quit smoking'. You know, maybe something more motivational or something not so imposing. (15–17 years, non-smoker, Curitiba)

### Cigarette toxic constituents

Another important innovation introduced in 2018 was textual warnings on the side face of packages, adding information about cigarette toxic constituents. This had great repercussions in the group discussions, although it remained almost unnoticed by the participants.

The side-face warning informs of the prohibition on the sale of cigarettes to minors and states—'Danger: toxic product'. Below this alert, variations describe different chemical substances present in cigarettes and other products, such as rat poison, batteries, etc, depicting the harm they cause to the human body (figure 1B).

Most participants stated that they had never noticed or read those warning and reported not knowing the information. However, when directed to the side face while handling the packages, they showed surprise and were impacted by the information, especially regarding the damage to health:

I read here, the benzene present in this type of product is found in gasoline! Guys, I didn't know that! (15–17 years, smoker, Curitiba)

The association of cigarettes with harmful products, such as gasoline, rat poison and chemical weapons, elicited greater fear, especially because these are products that are kept away from the body. Several participants stated that, in light of its importance, this information should be on the package's front face to increase its visibility, as smokers usually cover the side of the package with their finger. Others suggested highlighting this warning by increasing the font size and using other colours in the text, such as yellow or red. Non-smoking interviewees suggested that this information be printed on cards inside cigarette packs.

Another area for improvement is how the information is presented. Even though the participants felt shocked when discovering what kinds of substances cigarettes contain, many were confused:

What is arsenic? What kind of stuff is that? (18–55 years, non-smoker, Manaus)

It's like doing a chemistry exam. (18–55 years, non-smoker, Manaus)

The use of a specific message on each package caused confusion for some participants. One suggestion was to include a text emphasising that 'all cigarettes contain ...'. Some participants had difficulty understanding the meaning of the text, suggesting the need to create alternative ways to communicate toxic cigarette constituents. One suggestion was to translate this content to images. Another suggestion was to place this message in more relevant locations, such as the front side of the packages or as an insert card, which smokers need to handle when they open the package:

When you buy a cigarette pack and you open it, you don't hold it here; you hold it here—the hand hides [the message in the side]. (18–55 years, non-smoker, Recife)

If you move the message that's here on the side to the front face, it would have a greater communication power. (15–17 years, smoker, Campo Grande)

This sentence [from the side face] that's here [side face] could be inside. When you open the product... (18–55 years, non-smoker, Rio de Janeiro)

The message about the toxic contents of cigarettes sheds light on the formulation of the product rather than blaming the smoker's behaviour. The benefit of these alerts is cigarette denormalisation, thus combating the industry's strategy of glamorising the product.

### DISCUSSION

Our results indicate that the 2018 Brazil health warnings capture attention, eliciting apprehension, fear, disgust and concern about the negative consequences of cigarette consumption. Health warnings are spontaneously recalled by participants, even without the presence of cigarette packages. Smokers, however, used a broader repertoire of negative words to express their feelings when exposed to the images. Reports of aversion to the pictures and association of death or illness with cigarette smoking support the aversiveness approach adopted by Brazil, based on the use of images that aim to provoke a negative emotional reaction and revulsion toward the product.<sup>6 13</sup> Our results align with previous research showing the effectiveness of this approach in increasing perceptions of smoking-related health risk.<sup>20 21</sup>

Smokers' strategies to avoid seeing or hiding health warnings reveal a nuisance element, intrinsically emphasising the

importance of the message and making health warnings memorable. They continue to echo in the interviewees' consciousness, as suggested by smokers' recall of warnings and the broader repertoire of negative words associated with cigarette packs. While pictorial warnings elicit preventive and defensive reactions, such reactions are positive impact indicators,<sup>22</sup> as evidenced by the participants' acknowledgement that they caused them to feel fear, disgust and revulsion.

Brazil was the first country to use the word 'you' above the warning pictures, adopted from mass media campaigns to reduce drinking and driving. Grounded on the theory that persuasive communication promotes behavioural change, these campaigns involved the target audience, making them feel part of the change process and leading to the realisation that this change would positively impact those around them.<sup>23</sup> The use of 'you' was understood by the interviewees as a direct way to talk to the users and calling for their agency.

By revealing the substances contained in cigarettes, information unknown to the research participants, the warnings on the side face explicitly present the effects on the human body, evidencing how smoking behaviour causes harm. Combined with the back panel alerts, this information about toxic constituents counteracts the industry's glamorising of the product and denormalises the contents of cigarettes.

Regarding the variety of sentences on the side face, one study showed that the greater the number of messages displayed in the warnings, the greater the smokers' awareness of the health consequences. This was especially true when the information was less known,<sup>24</sup> showing consistency with the interviewees' statements, eliciting surprise and interest in the messages. However, despite this interest, the messages were largely unperceived by the participants due to their poor location and the proportion of the text. Besides the size, the textual form presented a challenge to many interviewees, who struggled with understanding.<sup>25</sup> Participants suggested the use of pictures in place of text, which might be particularly effective in developing countries with high levels of functional illiteracy.

Considering that the respondents identified the front face as the most visible location on the pack, the messages on the side face could gain more attention if moved to the front face or included as pack inserts. This strategy is recommended by the WHO Framework Convention on Tobacco Control and was adopted in countries such as Canada, where frequent reading of alerts was associated with self-efficacy<sup>26</sup> for smoking cessation.

The interviewees perceived the yellow colour in the warning stripes as an alert that drew their attention and suggested caution. This finding is in line with another study, in which yellow quickly caught consumers' attention. This suggests that health warnings with black text printed on a bright and contrasting background, particularly yellow, attract consumers' attention and convey the idea of warning or danger.<sup>27</sup>

However, manufacturers' strategy of modifying their packaging, using the same colour as the warnings in the advertising area, may decrease the impact of the health warnings. An alternative would be to implement plain packaging for all tobacco products.

Participants highlighted that tobacco health warnings are less effective for beginning smokers, as cigarettes are commonly purchased individually or offered by others, so package manipulation is less frequent. This points to the relevance of introducing alerts on cigarette sticks, an effective supplementary public health intervention to complement health warnings on packages,<sup>28</sup> which may have a deterrent effect.<sup>29</sup>

Although focus groups are recommended for accessing emotional and rational content, revealing the participants' logic and behaviour, some limitations also exist, such as social desirability bias, whereby participants phrase their statements in such a way to feel more accepted by others. The perceptions expressed in these groups cannot be generalised to the general population; quantitative studies could measure the distribution of these perceptions in the population in the future. Further, the results might have been different had we used other cigarette brands and packages.<sup>30</sup>

The present research points to some issues for future studies. Considering that the prevalence of smokers in Brazil is higher among low-income families and people with a low educational level,<sup>15</sup> future studies with illiterate consumers could test alternative messages conveyed by visual and alternative designs rather than textual messages to further explore consumers' perceptions. Given that some participants suggested presenting numbers and statistics highlighting the harmful effects of smoking, future studies could test approaches that communicate the magnitude of the risk, to see how they are perceived and interpreted by consumers.

This research can inform health authorities in their continuous quest to improve health warnings, ideally testing mocked-up packaging, alternative textual and graphic combinations before distribution.

#### What this paper adds

- ▶ Previous studies have shown that health warnings on tobacco product packages are effective for tobacco use control.
- ▶ Health warnings are subject to wear-out effects and lose their impact over time.
- ▶ In addition to the development of new warnings, it is important to seek new formats, content and layouts so the warnings meet their objectives.
- ▶ This paper enriches the discussion on pictorial and textual warnings about the toxic nature of cigarettes, overcoming comprehension barriers in low-income and low educational contexts. The results show the relevance of pictures, personal and direct language as well as the importance of bright colours on cigarette packaging.

**Twitter** Valeska Carvalho Figueiredo @Valeska Figueiredo

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#### ORCID iDs

Cristina de Abreu Perez <http://orcid.org/0000-0002-5170-9664>

Andre Luiz Oliveira da Silva <http://orcid.org/0000-0003-4768-959X>

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